

REMARKS/ARGUMENTS

Claims 10-18 are pending in this application.

The Abstract was objected to because it is allegedly more than one paragraph in length. Applicant respectfully disagrees.

On December 19, 2005, Applicant filed a Preliminary Amendment including a replacement Abstract which included only one paragraph. In response to the Preliminary Amendment filed on December 19, 2005, the USPTO issued a Notice of Non-Compliant Amendment because the replacement Abstract did not include markings showing the changes made to the originally filed Abstract. In the Response to Notice of Non-Compliant Amendment filed on February 28, 2007, Applicant submitted a replacement Abstract which includes markings showing the change made to the originally filed Abstract of the Disclosure. As indicated in the replacement Abstract filed on February 28, 2007 by the strikethrough prior to the indentation of the second paragraph, the originally filed Abstract has been amended to combine the first and second paragraphs into a single paragraph. Thus, contrary to the Examiner's allegation, the replacement Abstract filed on February 28, 2007 includes only one paragraph.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the objection to the Abstract.

Claims 10-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kadota (U.S. 6,366,002) in view of Li et al. (U.S. 5,418,058). Applicant respectfully traverses the rejection of Claims 10-18.

Claim 1 recites:

A surface acoustic wave sensor for detecting the minute mass applied to a surface acoustic wave element on the basis of the change in frequency using an SH-type surface acoustic wave, the surface acoustic wave sensor comprising:

a rotated Y-cut LiTaO<sub>3</sub> substrate having Euler angles of (0°, 0° to 18°, 0° ± 5°) or (0°, 58° to 180°, 0° ± 5°);  
electrodes, principally containing Au, and arranged on the LiTaO<sub>3</sub>

substrate to excite a surface acoustic wave; and

**a reaction membrane, bound to a target substance or a binding substance bound to the target substance, covering the electrodes arranged on the LiTaO<sub>3</sub> substrate;** wherein

the electrodes have a normalized thickness of about 0.8% to about 9.5%, the normalized thickness being determined by normalizing the thickness of the electrodes by the wavelength of the surface acoustic wave. (emphasis added)

With the unique combination and arrangement of features recited in Applicant's Claim 10, including the feature of "a reaction membrane, bound to a target substance or a binding substance bound to the target substance, covering the electrodes arranged on the LiTaO<sub>3</sub> substrate," Applicant has been able to provide a surface acoustic wave sensor which includes a surface acoustic wave element with an improved structure and which therefore has high sensitivity (see, for example, paragraph [0009] of the Substitute Specification).

The Examiner alleged that Kadota teaches all of the features recited in Applicant's Claim 10, except for the feature of "a reaction membrane, bound to a target substance or a binding substance bound to the target substance, covering the electrodes arranged on the LiTaO<sub>3</sub> substrate." The Examiner further alleged that Li et al. teaches a SAW chemical microsensor "with a selective thin film of a cyclodextrin derivative upon the sensor substrate." Thus, the Examiner concluded that it would have been obvious "to use a cyclodextrin film on the device of Kadota, as taught by Li et al., since doing so provides a chemical sensor having sensitivity to detect low levels of selected chemicals." Applicant respectfully disagrees.

Contrary to the Examiner's allegations, Li et al. neither teaches nor suggests any reaction membrane that covers any of the electrodes 12, 14, 16, 18. Instead, as specifically disclosed in col. 7, lines 19-24 and 36-39, the coated region 22, 36, which the Examiner alleged corresponds to the reaction membrane recited in Applicant's Claim 10, is disposed between and spaced away from the transducers 16, 18, 32, 34. Li et al. fails to teach or suggest that the coated region could or should be arranged in

any other location other than between and spaced away from the transducers 16 and 18, and certainly fails to teach or suggest that the coated region could or should be arranged to cover any of the transducers 12, 14, 16, 18.

Thus, Li et al. clearly fails to teach or suggest the feature of "a reaction membrane, bound to a target substance or a binding substance bound to the target substance, covering the electrodes arranged on the  $\text{LiTaO}_3$  substrate" as recited in Applicant's Claim 10.

In addition, assuming *arguendo* that Li et al. taught or suggested a reaction membrane as recited in Applicant's Claim 10, one of ordinary skill in the art would have had no reason or motivation to include the reaction membrane of Li et al. in the SAW device of Kadota. Particularly, Kadota discloses that the SAW device disclosed therein can be used as a SAW resonator, a SAW filter, and a sharing device, but fails to teach or suggest that the SAW device of Kadota could or should have been used as a SAW sensor, such as a biosensor or a gas sensor, or that the structure of the SAW device of Kadota would have been suitable for use as a SAW sensor. Since the SAW device of Kadota is not and cannot be used as a SAW sensor, there would have been absolutely no reason whatsoever to include a reaction membrane as allegedly taught by Li et al. in the device of Kadota.

Accordingly, Applicant respectfully submits that Kadota and Li et al., applied alone or in combination, fail to teach or suggest the unique combination and arrangement of features recited in Applicant's Claim 10.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Kadota in view of Li et al.

In view of the foregoing remarks, Applicant respectfully submits that Claim 10 is allowable. Claims 11-18 depend upon Claim 10, and are therefore allowable for at least the reasons that Claim 10 is allowable.

Application S.N. 10/561,251

March 17, 2009

Reply to the Office Action dated December 22, 2008

Page 8 of 8

In view of the foregoing remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Dated: March 17, 2009

/Christopher A. Bennett #46,710/  
Attorneys for Applicant

**KEATING & BENNETT, LLP**  
1800 Alexander Bell Drive, Suite 200  
Reston, VA 20191  
Telephone: (571) 313-7440  
Facsimile: (571) 313-7421

Joseph R. Keating  
Registration No. 37,368  
  
Christopher A. Bennett  
Registration No. 46,710